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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/674,550	03/27/2001	Oded Melamed	P- 674550	9025
23494	7590	09/30/2004	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			GOSHTASBI, JAMSHID	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/674,550

Applicant(s)

MELAMED ET AL.

Examiner

Jamshid Goshtasbi-G.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/27/01.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 4 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-10 are pending in the application.

Specification

2. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Objections

3. Claim 4 and 9 are objected to because of the following informalities:

In **Claim 4**, the word "frequency" at the end of the claim sentence seems extra and not needed.

In **Claim 9**, the word "frequency" after the word "edge" in line 2 of the claim is extra and not needed.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-4 and 6-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Patent No. 5894334 to Strolle et al.

As to **Claim 1**, Strolle et al. shows an apparatus for timing recovery (col. 4, line;

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Fig. 1, elements 20, 22, 25, 26, and 30) of a vestigial sideband signal comprising a narrow band pass filter adapted to receive a baseband VSB signal having a positive-frequency signal edge (band edge filters having band edge responses associated with upper and lower band edges of the VSB signal frequency spectrum; col. 2, line 67 – col. 3, line 5) and provide a portion of the positive-frequency edge (band edge filters produce output signals that contain either positive or negative spectral components but not both, and can be designed to have complex analytic output signals with positive spectrum; col. 4, lines 1-11 and col. 8, lines 24-26) and a non-linear transformer (Fig.1, the portion including elements 25, 26, and 28, with multiplier 26 as non-linear transformer element) adapted to receive the signal portion (output signal from filter 22 is conjugated and then multiplied by the output signal from filter 20; col. 4, lines 58-67) and to provide a timing-retrievable signal (the imaginary component of the output signal from multiplier 26 is an indication of the magnitude of signal mis-timing; col. 5, lines 20-22) adapted for retrieval of timing information.

Claim 2 inherits all the limitations of Claim 1; further, Strolle et al. shows a loop filter (Fig. 1, loop filter 38) adapted to receive the timing-retrieval signal (the imaginary component is separated in phase detector 28 and multiplied by the sign of the real component to produce an output that represents an error signal; col. 5, lines 27-33) and average it (the output signal from phase detector 28 is filtered by a loop filter 38 which contains an integral path; col. 5, lines 43-45) to provide a timing correction signal (the output of filter 38 is a DC voltage which is applied to a voltage controlled oscillator; col. 5, lines 49-50).

Claim 3 inherits all the limitations of Claim 1; further, Strolle et al. shows the pass band of the band pass filter encompasses positive-frequency signal edge (the negative (or positive, as anticipated; col. 4, lines 10-11) frequency spectrum encompassed by the band pass responses of filters 20 and 22, and by the bandwidth of the received VSB signal as applied to the inputs of filters 20 and 22.; col. 4, lines 12-15), with the center frequency included in the signal portion (the band edge responses of filters 20, 22 and the VSB signal intersect at the Nyquist point; col. 4, lines 25-26, and the signal (from the output of multiplier 26) at the suppressed carrier center frequency is maintained; col. 5, lines 6-7).

Claim 4 inherits all the limitations of Claim 3; further, Strolle et al. shows the signal portion includes a nonzero band of frequencies of the positive-frequency signal edge frequency (figures 4 and 5; band edge filters produce output signals that contain either negative (or positive, as anticipated; col. 4, lines 10-11) spectral components; col. 4, lines 1-11 and col. 8, lines 24-26).

As to **Claim 6**, the claimed method for timing recovery of vestigial sideband (VSB) modulated signals recites features that correspond with subject matter mentioned above in the rejection of Claim 1 and are applicable hereto.

Claim 7 inherits all the limitations of Claim 6; further, the claimed feature of averaging the timing-retrievable signal corresponds with subject matter mentioned above in the rejection of Claim 2 and are applicable hereto.

Claim 8 inherits all the limitations of Claim 6; further, the claimed feature of filtering provides the center frequency corresponds with subject matter mentioned

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above in the rejection of Claim 3 and are applicable hereto.

Claim 9 inherits all the limitations of Claim 8; further, the claimed feature of filtering steps provides nonzero band of frequencies corresponds with subject matter mentioned above in the rejection of Claim 4 and are applicable hereto.

Claim Rejections – 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strolle et al. (US 5894334) in view of Gatherer (US 5802461).

Claim 5 inherits all the limitations of Claim 1; further, while disclosing the multiplication of the upper band edge and the conjugate of the lower band edge (the signal portion), Strolle et al., however, fails to teach the squaring of the signal portion; however, Gatherer teaches that for band edge component maximization, $g(t) = \lambda(t) * \lambda(t)$, the complex conjugate of filtered right hand component (portion of the positive-frequency signal edge) of the VSB signal is taken before the terms are multiplied together (Fig. 1; col. 3, lines 49-51). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Gatherer into the method of Strolle et al. for producing the claimed invention because adapting the non-linear transformer to square the signal

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portion provides for band edge component maximization and provides a complex signal having a real and imaginary component (at the input of the phase detector 28 of Strolle et al.) and to use the imaginary component as timing-retrievable signal.

Claim 10 inherits all the limitations of Claim 6; further, the claimed feature of transforming step comprises squaring the signal portion corresponds with subject matter mentioned above in the rejection of Claim 5 and is applicable hereto.

Conclusions

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Abe [US 6148037] teaches the use of a complex squarer in a timing recovery circuit for a VSB signal where a construction such that the detection at frequencies around the Nyquist frequency as a center is executed is used; Claydon et al. [US 5717715] teaches the use of a non-linear transformer and an integral loop filter in a timing recovery circuit for a VSB signal.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jamshid Goshtasbi-G., whose telephone number is (571) 272-3012. The examiner can normally be reached on M-F 8:00/4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel, can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jamshid Goshtasbi-G.
Examiner
Art Unit 2637


KHAI TRAN
PRIMARY EXAMINER 9/29/04